SITE DESCRIPTION/EXECUTIVE SUMMARY

Site Name and Location

Johnson Control-Globe Union
951 Aiken Road
Owosso, MI 48867

County: Shiawassee
Michigan Code Number: 78-07N-03E-20CC
DNR District: Lansing
EPA ID Number: MID058816927

SAS Score/Screen No.: 07

Globe Union manufactures auto batteries; wastewater generated from floor and battery washing, air scrubbing water, and acid spillage are drained to a lagoon to a treatment tank where NaOH is added for pH adjustment. From there it is allowed to settle twice and is finally discharged to the Shiawassee River. Sediments in the Shiawassee River and in the drain from Globe Union to the Shiawassee River show high levels of PCB's and heavy metals, particularly lead. Native fish tissue samples near the Globe Union discharge drain contained PCB in levels below the FDA action level of 5 mg/l, whole clam tissue samples showed no detectable levels of organics but zinc levels ranged from 30 to 60 ppm. Groundwater flow is north-northwest at the site, toward the Owosso municipal well #1. Groundwater sampling showed heavy metals and phenols above background levels in 1984. Hazardous wastes are briefly stored on-site, the company is also a licensed hazardous waste hauler.

Recommendations For EPA

A medium priority for inspection is recommended. Monitoring well, effluent, river bed sediment, and nektonic/benthic organism sampling data is available in the file. Groundwater flow characteristics are known. Additional sampling of sediments and a biological survey may have merit to determine if contamination levels have changed. Otherwise, an HRS score can be generated from existing file data.

Date of Previous Summary: 11/27/84
Previous Author: B. Grabowski

Current Date: 6/24/85
Author: C. Grobbel

Site Assessment Unit
Groundwater Quality Division
Michigan Dept. of Natural Resources

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: MI | 02 SITE NUMBER: D058816927

II. SITE NAME AND LOCATION

01 SITE NAME: Johnson Controls - Globe Union
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: 951 Aiken Road
03 CITY: Owosso
04 STATE: MI | 05 ZIP CODE: 48867 | 06 COUNTY: Shiawassee | 07 COUNTY CODE: 155 | 08 CONG DIST: 10
09 COORDINATES: LATITUDE 43°59'06" | LONGITUDE 84°08'45" | Owosso South Quad (7.5 min.) 1972
10 DIRECTIONS TO SITE: I-69 to M-52 North into Owosso. East on M-21 in Owosso for ½ mile to M-71 south. M-71 curves East, follow M-71 1½ miles to Aiken Road. Site is on East side of Aiken Road 100 yards from M-71.

III. RESPONSIBLE PARTIES

01 OWNER: Johnson Controls Inc.
02 STREET: 5757 North Green Bay Ave.
03 CITY: Milwaukee
04 STATE: WI | 05 ZIP CODE: 53209 | 06 TELEPHONE NUMBER: (414) 228-1200
07 OPERATOR: Keith Fizzell - Plant Mgr.
08 STREET: 951 Aiken Rd.
09 CITY: Owosso
10 STATE: MI | 11 ZIP CODE: 48867 | 12 TELEPHONE NUMBER: (517) 723-7831
13 TYPE OF OWNERSHIP: [X] A. PRIVATE [ ] B. FEDERAL: _____ [ ] C. STATE [ ] D. COUNTY [ ] E. MUNICIPAL [ ] F. OTHER: _____ [ ] G. UNKNOWN
14 OWNER/OPERATOR NOTIFICATION ON FILE: [ ] A. RCRA 3001 DATE RECEIVED: ___/___/___ [X] B. UNCONTROLLED WASTE SITE DATE RECEIVED: 6/8/81 [ ] C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION: [X] YES [ ] NO DATE 10/15/84
BY: [ ] A. EPA [ ] B. EPA CONTRACTOR [X] C. STATE [ ] D. OTHER CONTRACTOR [ ] E. LOCAL HEALTH OFFICIAL [ ] F. OTHER: _____
CONTRACTOR NAME(S): _____
02 SITE STATUS: [X] A. ACTIVE [ ] B. INACTIVE [ ] C. UNKNOWN
03 YEARS OF OPERATION: ~1940 | present [ ] UNKNOWN
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED: Battery Acids, Sulfuric Acid, PCBs, heavy metals, oil
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION: Surface water Environment / population; Groundwater "; Drinking water "; Soils Environment

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION: [ ] A. HIGH [X] B. MEDIUM [ ] C. LOW [ ] D. NONE

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Leroy Uohovick	DNR - Hazardous Waste - Lansing District	(517) 322-4900

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Barb Grabowski	DNR	SAU	(517) 373-4800	6/24/85

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: MI | 02 SITE NUMBER: D0588/6927
26

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
A SOLID | E SLURRY
B POWDER, FINES | X F LIQUID
X C SLUDGE | G GAS
D OTHER: Sludge in discharge Area - Accumulation

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)
TONS: —
CUBIC YARDS: at least 30yd3 - buried sludge on site
NO OF DRUMS: —

03 WASTE CHARACTERISTICS (Check all that apply)
X A TOXIC | E SOLUBLE | I HIGHLY VOLATILE
X B CORROSIVE | F INFECTIOUS | J EXPLOSIVE
C RADIOACTIVE | G FLAMMABLE | K REACTIVE
X D PERSISTENT | H IGNITABLE | L INCOMPATIBLE
M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	unknown		30 yds³ known minimum
OLW	OILY WASTE	—	—	2000 mg/kg in Shiawassee R. sedi.
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	17000	mg/kg	PCB in Shiawassee R. Sedi. at discharge pt.
IOC	INORGANIC CHEMICALS			
ACD	ACIDS	—	tanks	Battery, Sulfuric Acids
BAS	BASES			
MES	HEAVY METALS	—	—	As, Ba, Cd, Cr, Cu, Pb, Mn, Se, Ag, Zn Ni

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	PCB 1242	Class-01-9	in Shiawassee R. sed. @ discharge	17000	ppb/kg
OCC	PCB 1254	" "	Shiawassee R. Sediments @ discharge pipe outfall	3000	ppb/kg
OLW	Oil		" "	2000	mg/kg
MES	As Arsenic	7440-38-2	Groundwater Sample	.073	mg/L
MES	Ba Barium	7440-39-3	" "	.75	"
MES	Cd Cadmium	7440-43-9	" "	.031	"
MES	Cr Chromium	7440-47-3	" "	.04	"
MES	Cu Copper	7440-50-8	" "	.03	"
MES	Pb Lead	Class-01-9	" "	.058	"
MES	Mn Manganese	7439-96-5	" "	15.8	"
MES	Hg Mercury	7439-97-6	" "	.0007	"
MES	Se Selenium	7782-49-2	" "	.008	"
MES	Ag Silver	7440-22-4	" "	.02	"
MES	Zn Zinc	7440-66-6	" "	.3	"
MES	Ni Nickel	7440-02-0	in Shiawassee R @ discharge pt.	1500.	"
OCC	Phenol	108-95-2	in Groundwater Sample	.013	"

NK ND B10

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

MDNR Groundwater Quality Div. Files; Region III H.Q. MDNR - Hazardous Waste Div., Surface Water Quality Div.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MI | 02 SITE NUMBER: D058816427

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION | 02 [X] OBSERVED (DATE 7/6/87) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 21,324. | 04 NARRATIVE DESCRIPTION
- Sludges buried on-site, up at least 30yd³s; groundwater shows high levels of heavy metals and Phenol. Soil in the area are generally heavy, with Clay-loam subsoils, underlain by Shale (50') and sandstone bedrock aquifer

01 [X] B. SURFACE WATER CONTAMINATION | 02 [X] OBSERVED (DATE: 6/24/80) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 21,326. | 04 NARRATIVE DESCRIPTION
- Shiawassee River sediments showed high levels of PCB's, some heavy metals and oil at point of discharge from Johnson Controls. Downstream levels are generally higher than upstream levels. Concern that heavily contaminated sediments below the Seward Drain may dislodge and flow into the Shiawassee R.

01 [ ] C. CONTAMINATION OF AIR | 02 [ ] OBSERVED (DATE: _____) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
N/A

01 [ ] D. FIRE/EXPLOSIVE CONDITIONS | 02 [ ] OBSERVED (DATE _____) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
N/A

01 [ ] E. DIRECT CONTACT | 02 [ ] OBSERVED (DATE _____) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
N/A

01 [X] F. CONTAMINATION OF SOIL | 02 [ ] OBSERVED (DATE _____) | [X] POTENTIAL | [ ] ALLEGED
03 AREA POTENTIALLY AFFECTED: Unknown (Acres) | 04 NARRATIVE DESCRIPTION
200 gallon spill of untreated effluent on 6/10/80 onto surrounding soil and parking lot; potential for seepage into soil from Seward Co. Drain (company discharge channel)

01 [X] G. DRINKING WATER CONTAMINATION | 02 [ ] OBSERVED (DATE _____) | [X] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 21,326 | 04 NARRATIVE DESCRIPTION
Owosso municipal well #1 is approx. 5 mile to the northwest. Groundwater flow at site is north-northwest in direction at 3.3×10^{-8} to 5.5×10^{-9} ft/day.

01 [ ] H. WORKER EXPOSURE/INJURY | 02 [ ] OBSERVED (DATE: _____) | [ ] POTENTIAL | [ ] ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
N/A

01 [ ] I. POPULATION EXPOSURE/INJURY | 02 [ ] OBSERVED (DATE: _____) | [ ] POTENTIAL | [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ | 04 NARRATIVE DESCRIPTION
N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: MI | 02 SITE NUMBER: MID058816927

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [X] J. DAMAGE TO FLORA — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION: State / Company official correspondence concerning proper disposal of buried wastes growing around edge of settling lagoon on July 16, 1981. ~ 250,000 gal

01 [X] K. DAMAGE TO FAUNA — 02 [X] OBSERVED (DATE: 6/24/80) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION (Include number of species): fish in Shiawassee river at upstream + downstream from discharge pipe show PCB ranges from 130 - 480 ug/kg; benthic organisms at discharge show 20 mg/kg Zinc, upstream range is 30 - 60 mg/kg. FDA std PCB = 5 mg/kg.

01 [X] L. CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION: - potential for human consumption of heavily contaminated organisms from Shiawassee River, especially near this site pipe outfall.

01 [X] M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 21,326. — 04 NARRATIVE DESCRIPTION: existence of buried sludges somewhere on-site in an unlined, uncapped area - potential

01 [ ] N. DAMAGE TO OFFSITE PROPERTY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION: N/A

01 [X] O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [X] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION: - Seward (and/or Caledonia Park) County Drain(s) are heavily contaminated with heavy metals and PCB in sediments

01 [ ] P. ILLEGAL/UNAUTHORIZED DUMPING — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION: N/A

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
N/A

III. TOTAL POPULATION POTENTIALLY AFFECTED: 21,326.

IV. COMMENTS
Johnson Controls - Globe Battery produces automotive batteries, it generates and stores hazardous waste for up to 60 days, is a licensed hauler of hazardous waste.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
MDNR Groundwater Quality Div. files; MDNR Region III H.Q. Hazardous Waste, Surface Water Quality files.

EPA FORM 2070-13 (7-81)

RS-8509-07

MI-0545-17

Hydro-geo information

GROUNDWATER MONITORING SYSTEM
JOHNSON CONTROLS, INC.
BATTERY DIVISION
OWOSSO, MICHIGAN
MARCH, 1985
REVISION NO.: 2

SECTION E

GROUNDWATER MONITORING SYSTEM

INTRODUCTION

This section presents the geologic, hydrogeologic, and water quality data collected to-date at the Battery Division facility in Owosso, Michigan. A hydrogeological report was prepared in January of 1984 for the two surface impoundments at the Battery facility. The report is found in Appendix E-1, and contains descriptions of the drilling program, geology, uppermost zone of saturation, and groundwater quality. Four borings were made as part of the hydrogelogic report and these borings were cased and used as monitoring wells (MW-1 through MW-4). The monitoring well locations are shown in Figure E-1, along with the locations of the surface impoundments.

Monitoring wells MW-1 through MW-4 were drilled and cased early in March of 1983. Drilling logs and details of monitoring well construction are included in Appendix E-1. These wells were sampled on the following dates:

March 7, 1983
July 6, 1983
October 7, 1983
January 17 and 20, 1984
April 23 and 26, 1984
July 6 and 10, 1984
October 12 and 25, 1984
December 9, 1984

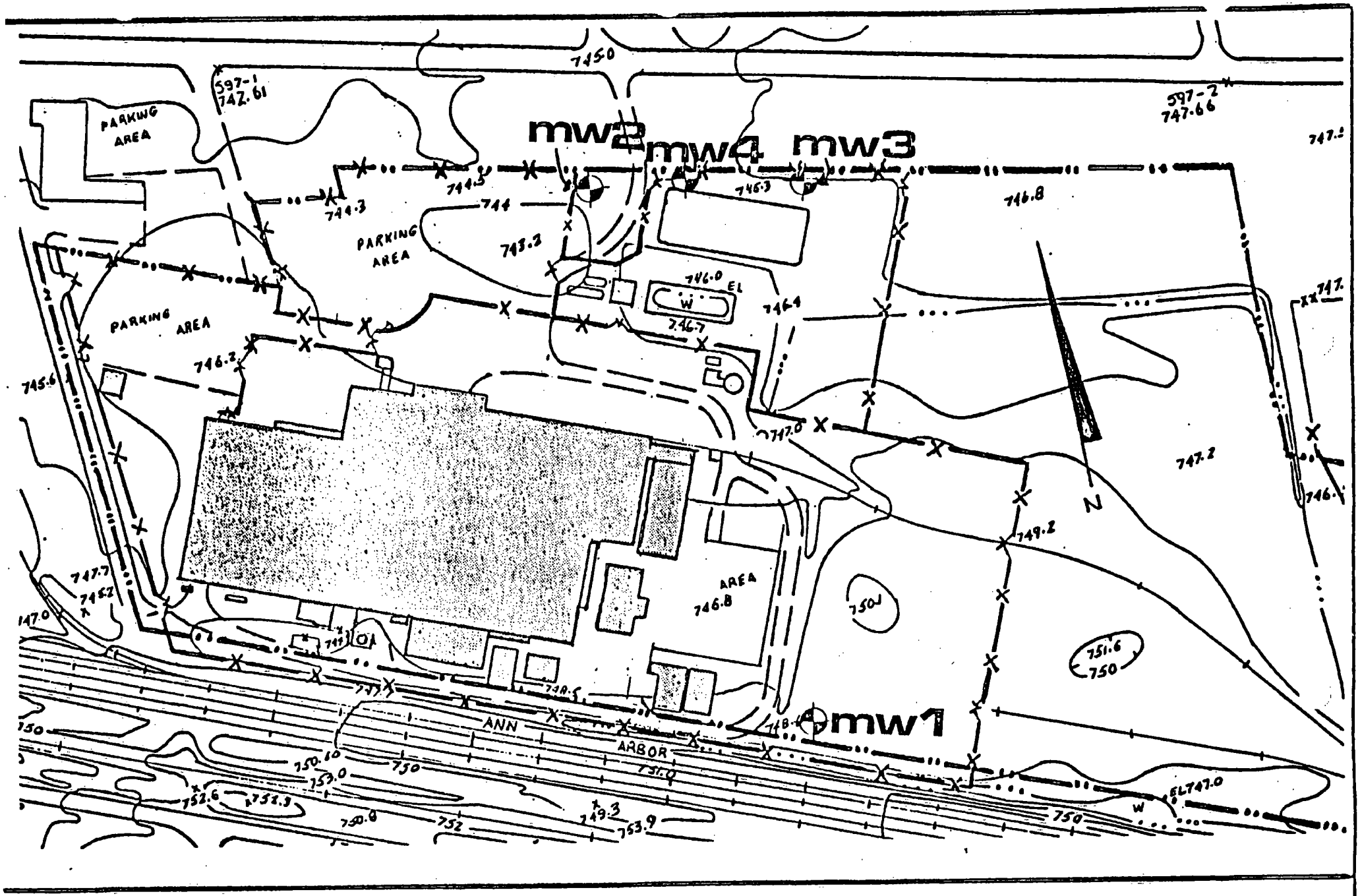

FIGURE E-1
WELL LOCATIONS
GLOBE BATTERY DIVISION
OWOSSO, MICHIGAN

The analytical results for the sampling dates are contained in Appendix E-2. The results for March 7, 1983 were discounted and not used as the first set of quarterly background water quality samples because of problems with proper detection limits and the wells not being properly developed. The quarterly background water quality data were obtained from July, 1983 through April, 1984, and groundwater quality statistics were computed with these data according to Iterim Status regulations.

Samples taken in July, 1984 were at the request of the Michigan DNR and were split with the DNR. MW-1 through MW-4 were sampled on a semi-annual basis in October, 1984 according to Interim Status regulations. The groundwater quality data for October, 1984 were compared to the background water quality statistics according to Interim Status regulations. Statistically significant changes in groundwater quality were found at the monitoring wells for the parameters listed on Table E-1. The monitoring wells were resampled in December of 1984 and the statistically significant increase in specific conductance was confirmed for MW-2. The computation sheets of groundwater quality statistics are found in Appendix E-3.

A groundwater quality assessment plan was prepared under Interim Status regulations in January, 1985. This plan is to be revised in March of 1985 to fit in with the RCRA Part 264 requirements. This plan, once approved by EPA, will be followed and should provide the groundwater quality data to: 1) better define a plume of contamination (if any exists); and 2) provide groundwater quality data necessary to complete the groundwater monitoring plan under Part 264 of 40 CFR. Monitoring wells will

TABLE E-1

STATISTICALLY SIGNIFICANT CHANGES IN
GROUNDWATER QUALITY

Sampling Date: October 12 and 23, 1984

Monitoring Well	Parameter	Comments
MW-1	pH	Significant Decrease
MW-3	pH	Significant Decrease
MW-4	pH	Significant Decrease
MW-2	Specific Conductance	Significant Increase
MW-3	Specific Conductance	Significant Increase
MW-1	TOH	Significant Increase

Notes:

1. The statistically significant increase in specific conductance at MW-2 was confirmed with sampling in December, 1984.

2. MW-1 is upgradient.

3. The pH meter was suspected of being faulty.

be sampled and analyzed for indicator and water quality, parameters, Appendix III parameters, Appendix VIII parameters, and other hazardous waste constituents.

Additional hydrogeological data were obtained in December of 1984 as part of the groundwater quality assessment plan. The additional information is contained in Appendix E-4.

This section of the RCRA Part B application contains brief descriptions of geology, soil borings, monitoring wells, permeability tests, groundwater elevation data, and groundwater quality data. Groundwater quality standards also are discussed and groundwater quality data which exceed standards are noted. A groundwater monitoring program is proposed although it is not complete. The groundwater monitoring program cannot be completed until sampling and analysis are conducted according to the groundwater quality assessment plan . Once the results of the groundwater quality assessment plan are known, the hazardous waste constituents which will be monitored, and the frequency of monitoring will be selected according to either a detection or compliance monitoring program. Water quality standards for these hazardous waste constituents also will be proposed in the completed groundwater monitoring plan.

LOCAL GEOLOGY

Local geology is discussed in more detail in the hydrogeological report in Appendix E-1. The Battery facility is located on a minor bench feature of the Shiawassee River allivial plain. The surficial deposits generally consist of yellow-brown and blue-gray clays. The clay units are in contact with a shale unit, which are above sandstone formations. There is a saturated zone in the clay units which is considered the uppermost aquifer. However, water supply wells generally are not placed in the clay units because of very low yields. Wells for water supply generally are drilled into the sandstone formations. Water well records were reviewed in the hydrogeological report in Appendix E-1.

SOIL BORINGS

Soil boring logs are located in the hydrogeological report (Appendix E-1) and with the additional hydrogeological investigative work (Appendix E-4). The local geology is illustrated on the generalized fence diagram in Appendix E-4 which links soil boring logs made on the Battery site. The locations of all of the soil borings are shown on Figure 1 in Appendix E-4.

PERMEABILITY TESTS

Permeability tests were made on liner samples taken from the soil borings made in December of 1984 which were part of the additional hydrogeological investigative work (Appendix E-4). The locations of the borings are shown on Figure 1 in Appendix E-4, and the results of the permeability tests are summarized on Table E-2. The average vertical hydraulic conductivity (permeability) measured is 5.7×10^{-7} cm/sec.

GROUNDWATER ELEVATION DATA

Static water level measurements were taken for each well prior to sampling under Interim Status regulations. Some groundwater elevation data also were collected as part of the additional hydrogeological investigative work (Appendix E-4). The groundwater elevation data for December, 1984 were put on a site map and groundwater contours were interpreted. Figure 2 in Appendix E-4 shows these groundwater contours. The elevation of the uppermost zone of saturation is about 10 feet below grade.

IDENTIFICATION OF THE UPPERMOST AQUIFER

The uppermost aquifer has been identified to be in the clayey sediments. The top of the zone of saturation generally is about 10 feet below grade. The depth of the clay units at the Battery facility is about 22 to 25 feet below grade. The aquifer is in

TABLE E-2

VERTICAL HYDRAULIC CONDUCTIVITY

BATTERY DIVISION, JOHNSON CONTROLS, INC.
OWOSSO, MICHIGAN
LABORATORY HYDRAULIC CONDUCTIVITY VALUES

Sample Location	Depth Interval	Hydraulic Conductivity in cm/sec.
TH-1	19' - 21'	2.4×10^{-7}
MW-6	19' - 21'	2.1×10^{-7}
MW-8	19' - 21'	2.0×10^{-7}
MW-9	18' - 21'	4.7×10^{-8}
MW-10	19' - 21'	1.2×10^{-6}
MW-11	19' - 21'	2.9×10^{-6}
MW-12	14' - 16'	4.6×10^{-8}
MW-13	19' - 21'	9.1×10^{-8}
MW-14	14' - 16'	1.6×10^{-7}

Hydraulic conductivity was measured using the constant head method.